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# Dietary fat and plasma total homocysteine concentrations in 2 adult age groups: the Hordaland Homocysteine Study<sup>1,2,3</sup>

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**Background:** The intake of n–3 (formerly called omega-3) fatty acids (FAs) may be inversely associated with plasma total homocysteine (tHcy) concentrations, but the epidemiologic data are sparse.

**Objective:** We examined the association between dietary fat and tHcy in a Norwegian population.

**Design:** A cross-sectional, population-based study of 5917 subjects in 2 age groups (47–49 and 71–74 y old) was conducted with the use of food-frequency questionnaires and measurement of plasma tHcy concentrations.

**Results:** The intake of saturated FAs (SFAs) was positively and significantly ( $P$  for trend < 0.001) associated with tHcy concentrations; the difference in plasma tHcy concentrations between the highest and lowest quartiles of SFAs was 8.8%. The intake of marine very-long-chain n–3 FAs was inversely associated with tHcy concentrations; the difference in plasma tHcy concentrations between the lowest and the highest quartiles was –5.0% ( $P$  for trend < 0.001). Intakes of total and monounsaturated fat also were positively associated with plasma tHcy concentrations ( $P$  for trend < 0.001 and < 0.005, respectively), whereas the intake of polyunsaturated fat was positively associated with tHcy concentrations only in the younger subjects ( $P$  for trend = 0.03). The associations were weakened by additional adjustment for B vitamin intake but remained significant for SFA intake ( $P$  < 0.001). When stratified for total B vitamin intake, the inverse association between tHcy concentrations and very-long-chain n–3 FAs was significant only in the highest quartile of B vitamin intake ( $P$  for trend = 0.001), regardless of supplement use.

**Conclusions:** High intakes of SFAs are associated with high plasma concentrations of tHcy. The inverse association between dietary intakes of very-long-chain n–3 FAs and plasma tHcy concentrations is apparent only at high B vitamin intakes.

**Key Words:** Diet • dietary fat • total homocysteine • n–3 fatty acids • saturated fat • fish • Hordaland Homocysteine Study

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